

What is claimed is:

1. A method for designing a mold, in an event of implementation of injection molding using a mold having a plurality of resin inflow conduits to cavity,

5 comprising a step of determining a mold design parameter which is related to at least one of the arrangement, the shapes and the sizes of said resin inflow conduits, by combination of a numerical analysis method for calculating an injection molding process and  
10 a computer-aided optimization method, for the purpose of obtaining a desired injection molding condition.

2. The method for designing a mold according to claim 1, wherein said purpose is to obtain a molding condition in which a mold clamping force required for  
15 molding can be reduced.

3. The method for designing a mold according to claim 1, wherein said purpose is to obtain a molding condition in which weld line occurrence in a molding can be suppressed or controlled.

20 4. The method for designing a mold according to claim 3, wherein an area in which weld line occurrence is intended to be suppressed or controlled is divided into a plurality of areas and a weighting weld line occurrence quantity in the plurality of the areas is  
25 used as a weld line evaluation value, thereby inducing weld line occurrence into a specified area or avoiding

weld line occurrence in a specified area.

5           5.     The method for designing a mold according to  
claim 1, wherein said purpose is to obtain a molding  
condition in which both reduction of a mold clamping  
force required for molding and suppression or control  
of weld line occurrence in a molding product can be  
achieved.

10           6.     The method for designing a mold according to  
claim 5, wherein an objective function for optimization  
includes a weighting addition of mold clamping force  
required for molding and a weld line evaluation value  
for evaluating weld line occurrence.

15           7.     The method for designing a mold according to  
claim 1, wherein said mold design parameter includes  
numbers and/or positions of gates that are inflow  
openings to cavity of said mold.

20           8.     The method for designing a mold according to  
claim 1, wherein said mold design parameter includes  
the sizes and/or the shapes of gates that are inflow  
openings to the cavity of said mold.

25           9.     The method for designing a mold according to  
claim 1, wherein in case of determining said mold  
design parameter, a process parameter to set a resin  
inflow in a molding process is determined together with  
the mold design parameter.

10.     The method for designing a mold according to

claim 9, wherein said process parameter is a parameter that controls actions of inflow regulation valves arranged in a plurality of the resin inflow conduits.

11. The method for designing a mold according to claim 10, wherein said process parameters are optimized under a condition where at least one inflow regulation valve is opened at a certain timing during a resin filling process.

12. A method for producing an injection molding in the case of implementation of injection molding with a mold having a plurality of resin inflow conduits to a cavity, comprising the steps of:

determining a mold design parameter in relation to at least one of the arrangement, the shapes and the sizes of said resin inflow conduits, by combining a numerical analysis method for calculating an injection molding process with a computer-aided optimization method for a purpose of obtaining a desired injection molding condition;

producing the mold based upon the determined mold design parameter; and

carrying out the injection molding with the produced mold.

13. A program for the purpose of obtaining a desired injection molding condition in the case of implementation of injection molding by use of a mold

having a plurality of resin inflow conduits to a cavity, wherein a process that determines a mold design parameter in relation to at least one of the arrangement, the shapes and the sizes of said resin inflow conduits, by combining a numerical analysis method for calculating an injection molding process with a computer-aided optimization method is carried out by a computer.

14. An injection molding device comprising:

a molding device main body that supplies resin material to a mold having a plurality of resin inflow conduits to a cavity, through said resin inflow conduits;

a memory section that memorizes process parameters determined by combining a numerical analysis method for calculating an injection molding process and a computer-aided optimization method; and

a control section which controls said molding device main body based upon process parameters in accordance with the mold to be used, and carries out injection molding by controlling time-sequentially an inflow of the resin material from said resin inflow conduits to said mold.